The Excavating Engineer

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A Modern Coal Stripping Installation

Description of the Allied Coal Co.'s installation in Ohio. With special reference to the operation of the coal stripping and coal loading shovels and the simple and flexible design of the plant.

THE following description of the Allied Coal Co.'s stripping operation at Sonora, Muskingum County, Ohio, will undoubtedly be of particular interest to many operators and prospective operators, not only on account of the efficient handling of the coal stripping and coal loading equipment, but because of the up-to-date, simple and yet flexible design of the plant itself.

The Stripping Operations — Averaging 78,000 Yards per Month

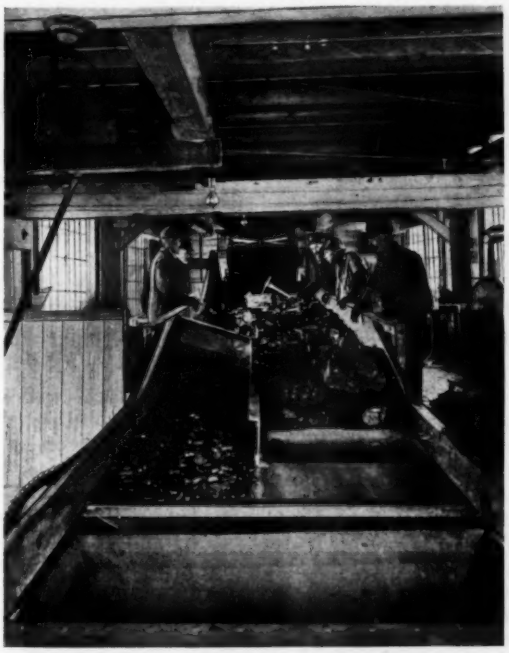
The stripping is handled by a 225-B Bucyrus revolving shovel, equipped with a 6-yard dipper and an 80-foot boom and weighing approximately 336 tons.

The overburden averages about 18 ft. in depth and consists on the average of 10 ft. of sand and clay and 8 ft. of shale. The heavy character of this digging may be readily seen from the accompanying illustration. This shovel operates in a cut averaging 60 ft. in width. According to Mr. C. H. Flynn, general superintendent, the yardage moved by this shovel in the last five months is 390,000 cu. yds., which as may be seen is an average of 78,000 cu. yds. per month, working an eight hour day. The working time has averaged 7 hours per day, with one hour delay. The maintaining of this high output may be laid in a great measure to Mr. Flynn's management of the operations.

Coal Loading—Output of Shovel

The coal, which is known as No. 6 and is of excellent quality, lies in a vein 3 ft. 6 in. in thickness. It is loaded by a 35-B Bucyrus coal loading shovel, equipped with a 1½-yard dipper, specially designed for the purpose with a 30-foot boom and 19-foot dipper handle. The shovel, as may be seen is mounted on caterpillar traction.

The coal breaks up about 1/3 slack and 2/3 lump. It is loaded by the shovel into 4-yard Western dump cars on a track 3 ft. 6 in. above the pit floor. These cars are made up into two trains of 12 cars each, which are hauled by 18-ton Porter locomotives on a 3-foot gauge track. The shovel averages about 1,000 tons per 8-hour day. It operates in a cut 42 ft. in width.

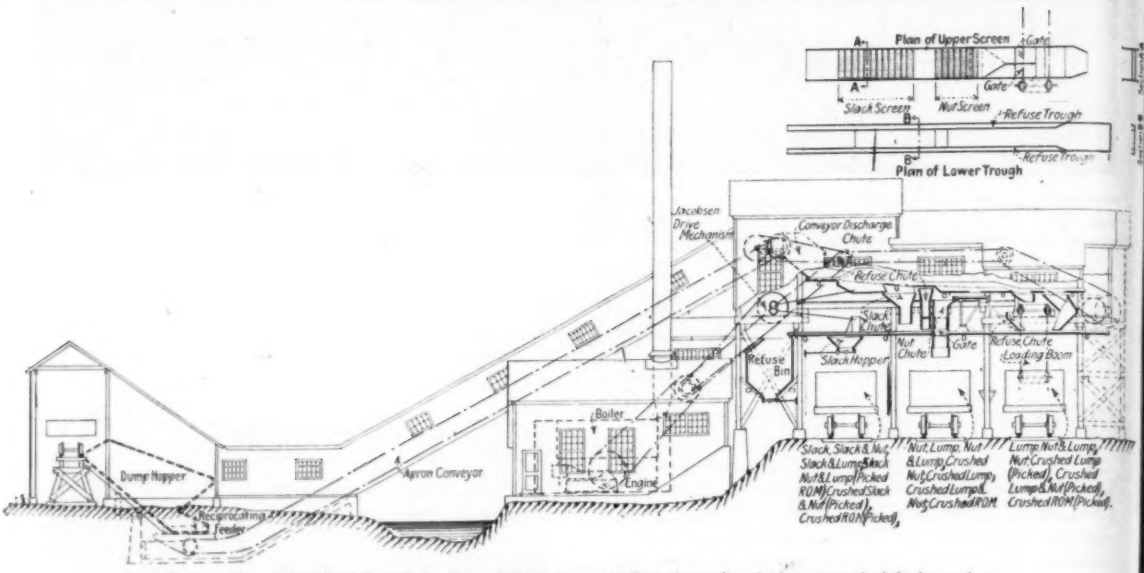


Pickers at work at the horizontal conveying screen on the upper deck. The lump coal is here being pushed to one side of the shaker before delivery.

The pit is drained by centrifugal pumps driven by kerosene engines.

Description of Plant

The tipple is designed to handle 250 tons of coal per hour and consists briefly of a housed receiving hopper of 35 tons capacity, a feeder, a steel apron type elevating conveyor, a set of Jacobsen balanced horizontal picking table screens combining refuse disposal facilities, a


Plan of Upper Screen
Gate
Slack Screen
Nut Screen
Refuse Trough
Plan of Lower Trough
Jacobsen Drive Mechanism
Conveyor Discharge Chute
Refuse Chute
Slack Chute
Slack Hopper
Nut Chute
Gate
Refuse Chute Loading Boom
Refuse Bin
Boiler
Engine
Dump Hopper
Reciprocating Feeder
Apron Conveyor
Slack, Slack & Nut, Slack & Lump, Slack Nut & Lump (Picked ROM), Crushed Slack & Nut (Picked), Crushed ROM (Picked),
Nut, Lump, Nut & Lump, Crushed Nut, Crushed Lump, Crushed Lump & Nut, Crushed ROM
Lump, Nut & Lump, Nut, Crushed Lump (Picked), Crushed Lump & Nut (Picked), Crushed ROM (Picked).

Cross section of the Allied Coal Co.'s plant. Side dump cars deliver the coal to the hopper at the left, from where it is fed to a conveyor which delivers it to the screening plant. As may be seen almost any combination of sizes can be delivered to any track under the tipple.

refuse storage, lump loading boom, and a compact power plant.

The coal is brought from the stripping pit to the tipple in trains, which discharge into the wood steel-lined receiving hopper.

The Hopper and Feeder

The receiving hopper is provided with a reciprocating feeder for uniformly feeding the coal into the foot end of the steel apron type conveyor which extends into the waterproofed concrete pit supporting the receiving hopper. Power is imparted to the feeder by a chain drive from the conveyor foot shaft and a clutch is provided for disengaging the feeder to permit an operation of the conveyor independent of the feeder. This will leave the conveyor free from coal at the close of the day's work.

The Conveyor to Screens

The apron conveyor elevates the coal for direct discharge to the tipple screens. This conveyor has a capacity of 250 tons per hour. It is 36 inches wide and approximately 105 feet long and is belt driven from the countershaft indicated in the sketch.

The discharge end of the conveyor delivers the coal with a uniform rate over the chute directly to the horizontal shaker screens.

Action of Jacobsen Picking Table Screens

The Jacobsen balanced horizontal picking table screen as here installed consists of a pair of horizontally reciprocating troughs, an upper screen section and a lower steel trough section. The screen and the trough section have relatively reverse conveying motions, and as they are mounted on floating type rollers, there is no vertical motion in the movement of the screen so that coal can be readily hand-picked directly on the screen.

The upper screen is 5 feet wide and approximately 45 feet long and is arranged to receive the coal directly from conveyor chute under which it extends and reciprocates. The coal is first passed over 12 feet of 5/8 inch by 7/8 inch lip screen for removing all slack coal. Part of the slack coal is caught on the short horizontal deck and conveyed forward to a chute which is flared at the top to receive the remainder of the slack and to deliver it to the center compartment of the lower trough, which, as above stated, has a reverse conveying action and will therefore convey the slack a short distance back for discharge into the slack hopper. A standard rack and pinion gate controls the discharge of the slack from the hopper into the slack car.

The lump and nut coal, which has been relieved of the slack, can now be picked as it passes over the blank plate and then over the 6 feet of 1¼ inch by 1½ inch lip screen for removing the nut. The nut coal is received on the lower deck and is lowered through a gate onto the elevated trough which is rigidly supported on the lower trough and will therefore convey the nut coal backward for discharge into the nut chute which is provided with a special hinged apron discharge for proper loading into the nut car.

The Loading Boom—its Operation

The lump coal in its travel, is slightly deflected to one side of the screen trough and then discharged with practically no drop through the gate, over the short chute, onto the apron conveyor loading boom. This Webster steel apron conveyor loading boom which is employed for gradually lowering the lump coal into the lump car without breakage, is 48 inches wide, has a 20 foot horizontal section and a 24 foot hinged section which is so pivoted that it can be raised and lowered for careful loading and trimming of the cars.

Should it be desired to mix the nut with the slack it is necessary only to open the gate which will discharge the coal directly into the center compartment of the lower trough. With the gate in closed position, the nut coal will be conveyed back toward the slack hopper, where preceding its discharge therein it is mixed with the slack coming from the upper screen through the chute.

Lump and nut can be loaded over the loading boom by the manipulation of the gates. This will permit the discharge of the lump and nut over the chute to the loading boom. If it is desired to load the lump and nut on the nut track the gates can be closed so that both sizes will be conveyed towards the end of the upper screen and discharged through a gate and chute onto the lower trough compartment in which both sizes are conveyed backward for loading to the nut track.

In loading picked run-of-mine the nut and lump after being picked on the screen are bypassed as above explained to the lower trough. It is obvious that if the nut gate is closed the lump and nut coal will be conveyed farther back for direct discharge into the slack hopper.

The present installation provides for future crushing of the nut or lump coal by the simple addition of a suitable frame structure as shown dotted on the drawing and the installation of a crusher to receive the coal from the end of the upper screen.

In crushing the coal, the closing of proper gates will permit the lump to pass directly into the crusher and over the lower trough for loading on either nut track or for mixing with the slack. The nut coal, in this case, is discharged through the upper gate and over the chute onto the loading boom for loading on the lump track.

The entire equipment is so flexible that a simple manipulation of the gates mentioned will readily load the various sizes and their combinations as indicated on the sketch.

Power Plant

The entire tipple and power plant is of frame construction built on concrete foundations.

The power plant consists generally of one 150 H. P. 72 inch by 16 feet Erie City high pressure stationary boiler, and a 16 inch by 18 inch "Vim" heavy duty center crank automatic engine rated at 125 H. P., manufactured by the Ames Iron Works.

Capacity of Plant

The capacity of the plant, provided necessary cars were obtainable, is 26,000 ton per month, but due to the severe car shortage the plant is only operating a small percent of its capacity or about 8,000 tons per month.

This article would not be complete if it would not make reference to those men whose foresight and effort have made possible such a smooth running installation. Edward A. Langenbach is President and general manager. A. J. Tice, vice president and director of Sales. A. A. Serva assistant general manager, secretary and treasurer, C. H. Flynn, general superintendent, Ralph Adams, general foreman and Foye Marshall, tipple foreman.

The 225-B shovel is operated by Victor Erickson as runner, Thomas Walker as cranesman and Peter Kuhn oiler, (he is a white "coon") and Guy Morrison fireman. On the 35-B shovel, Dave Wiles is runner and William Arnold fireman.

The only fault that Bill Arnold finds with this shovel is that it is too small for his feet, according to his boss.

The tipple above described was designed and built by Jacobson & Schraeder, Engineers & Constructors, Majestic Bldg., Chicago, Ill.

Quarry Stripping with a Revolving Shovel

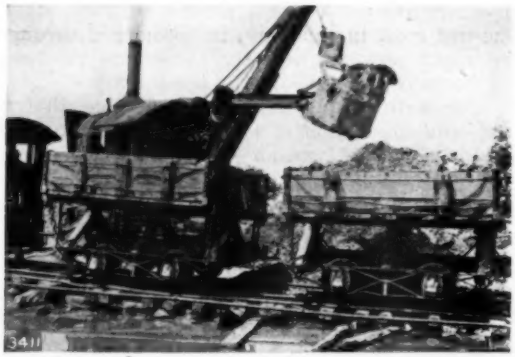
By H. A. McPolin, The Dolomite Products Company.

Experience of the Dolomite Products Company of Cleveland graphically told. How a seven-eighths yard revolving shovel stripped 450,000 cubic yards in seven years with low upkeep. How a net saving of over $100 a working day was effected. Hand and team work.

This Company is Also Operating Three Other Bucyrus Shovels, a 70-C, a 70-ton and a 95-C.

IT seems strange that with all our progress in the art and science of quarry management, that the old system of stripping by hand and team should have remained unchanged for so long. This old rule-of-thumb method was difficult to discard, and continued — like a shaky inheritance — with our company until a few years ago.

How this came about is a story — romantic and economic — briefly this: One hot day — No, not once upon a time — the President of the Com-



18-B Bucyrus Stripping Quarry for Dolomite Products Company, Maple Grove, Ohio

pany, the late Mr. H. P. Eells, Sr., was making his usual trip to the plant; he saw the men and the teams sweltering under a blazing sun. The teams and teamsters that were waiting to get wagons loaded were endeavoring to keep cool and swat the busy flies. One of the teamsters was the actual prototype of the now famous Fatty Arbuckle.

The incident made such an irresistible appeal to Mr. Eells that he at once suggested to the then Superintendent Mr. Geo. W. Patnoe, the desirability of procuring a small revolving shovel to eliminate the conditions he observed.

This radical improvement brought the usual irresponsible effrontery from hand-made critics.

An 18-B Bucyrus was installed despite the critics. Seven years have come and gone, the big War has been fought. Kings and Princes have passed away. New maps have been charted, but the 18-B goes on.

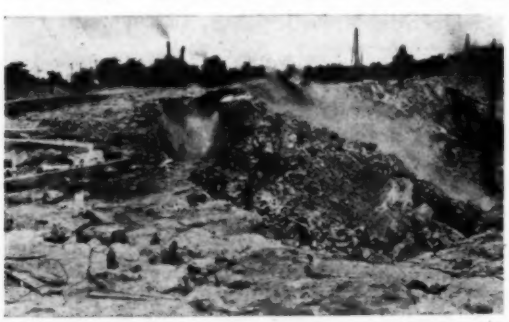
The value of the investment has increased. The wisdom of supplanting the old method vindicated.

Today the upkeep of the shovel is only nominal. We have stripped 450,000 yards in the seven years. The repairs have been slight, outside of a new boiler, but this was due to the injurious effect water with a limestone deposit has upon all boilers.

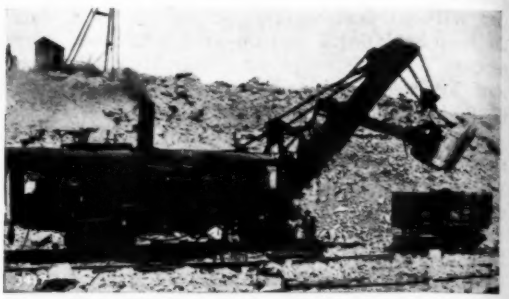
The benefits from using a shovel of this type for stripping are obvious:

First: The great saving of man power.

Second: The rapid and efficient way the work is done.



Big Blast in quarry of Dolomite Products Company. What 4300 pounds of dynamite can do.



95-C Bucyrus Steam Shovel Loading Rock

Comparative Costs

The old method required one foreman, 25 men and 5 teams. Under the present wage scale the cost would approximately be:

25 men at $4.00 per day	$100.00
1 Foreman at $5.00 per day	5.00
5 teams at $6.50 per day	32.50
A daily cost of	$137.50

The present rate for handling the same quantity of stripping:

1 Engineer	$ 6.50
5 Men	20.00
1 Ton Coal	5.00
Waste, Oil, etc.	1.50
Allow for Depreciation	2.00
	$ 35.00
Net saving per working day	$102.50

The depreciation of shovel, etc. about equals the loss due to hand shovels broken, etc., when used by a gang of 25 men.

The following factors should be considered too:

Efficient performance.
Reliability and adaptability.
Moderate upkeep.
Necessary problems to be considered when endeavoring to increase the market for stone and meet high priced labor.

"Have you seen May?"
"May who?"
"Why Mayonnaise."
"No, she is dressing, and won't lettuce."

Excavating for Ballast in England

By R. G. Burdett, London and Provincial Ballast Co.

Description of an unusual dragline installation in England. Mining ballast in 17 feet of water. Loading into cars on trestle 20 feet above ground level. An output of a ton per minute has been attained.

DIGGING in 17 ft. of water presents one or two features which may be of interest to readers of The Excavating Engineer.

With the aid of a Class 9½ Bucyrus dragline excavator fitted with a 45 ft. jib and mounted on rail trolleys, this is being successfully carried out by the London & Provincial Ballast Co. of 20-21 Essex St. Strand, London, at their ballast pit situated on the Slough Branch of the Grand Junction Canal near West Drayton, Middlesex, England.

Description of Pit Arrangement

The site where operations are being carried on is a triangular shaped island, bounded on two sides by the forks of a river. The level of the canal which forms the base of the triangle is 12 ft. above that of the rivers, and is carried over them by means of aqueducts.

In order to load the ballast into canal boats which are used for the transport, an overhead railway 15 ft. high was constructed on steel trestles. The line runs parallel to the track of the excavator and is taken over the bank of the canal and extended by means of a cantilever gantry directly over the boat to be loaded.

Standard 24″ gauge side-tip steel wagons of 1 yd. capacity are used to convey the material from the 1¼ yd. bucket fitted to the Bucyrus. Owing to the height of the top of wagon (about 20 ft. above ground level) a hopper cannot conveniently be used, and it is interesting to note that the free running nature of the ballast prevents the bucket being filled and the 1 yard skips are loaded direct from the 1¼ yd. bucket of the Bucyrus to a heaped load without waste.

Credit is due to the driver that although thousands of wagons have been loaded in this way, three only have been tipped in loading and in all cases this has been due to faulty catches.

The Method of Stripping

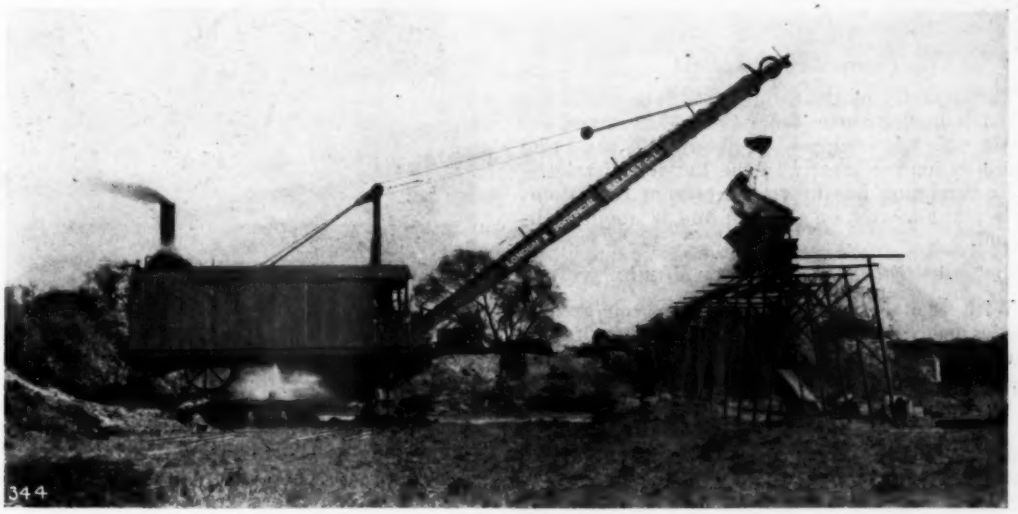
In excavating the ballast, which is of the highest quality and is in great demand for the best class of concrete work, the top soil which varies from 15″ to 30″ in depth is stripped by the dragline and dumped behind her.

In stripping, the bucket is thrown clean over the bank into the river, the whole of the top soil therefore being removed and the stream being free to flow through the pit and carry off all mud in suspension.

Digging under Water

The level of the water is about 12″ below ground level and above the level of top of ballast. This fact makes it almost impossible to work the pit by the usual means of hand stripping.

The first few buckets of ballast brought up are tipped back into the water to remove any



The London Provincial Ballast Co.'s C1-9½ Bucyrus Dragline Excavator, Loading Cars on a 20-foot Trestle

Digging Ballast in 17 Feet of Water

mud remaining but it is found quite unnecessary to do this when well into the material.

Additional holes have been drilled in the bucket to provide quick drainage and the color of water from the load gives a very true guide as to the cleanliness of the ballast. At the first sign of mud it is simply tipped back and redredged.

Having taken out the ballast which varies in depth from 13 to 17 ft. the dump of top soil is re-handled by the Bucyrus and tipped back into the pit. Moving back, a fresh portion is stripped and operations resumed.

Character of Ballast

The capacity of the canal boats into which the ballast is loaded varies from 40 to 50 tons and the ballast which is composed of about 70% sand and shingle is for use mostly in the London district.

No screening has up to the present been done, but a plant is now on the site and is about to be erected.

An Output of a Ton per Minute

With regard to output this has been greatly handicapped through the irregular running of boats due to delay in unloading, the varying length of journeys, etc., also to the fact that the canal is very shallow at the banks. More time has often been expended in moving boats when loading than in the actual loading. This disadvantage is now being rectified by the provision of a proper wharf and the deepening of the canal which will enable the boats to move up without loss of time.

In spite of these difficulties loading is often carried on at the rate of over a ton per minute and 4 boats have been loaded in two hours and twenty minutes, including the time lost in moving boats up. Considering that a distance of about 300 ft. has to be traversed by the wagons and that apart from the dragline only four men are employed in loading wagons, moving them and loading boats, this represents good going.

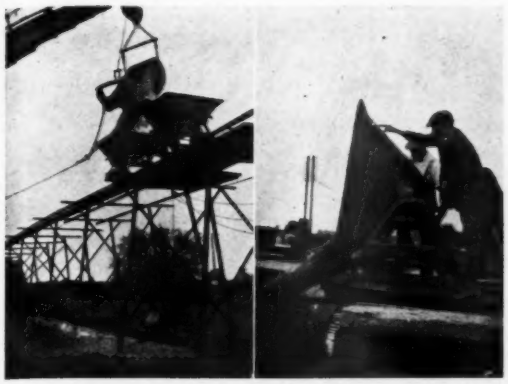
The dragline, however, can always beat the transport and the bucket is usually over the track impatiently waiting to tip its load. In fact she seems to thoroughly enjoy herself when she has a go at the periodical stripping and has nothing to wait for. A sight of the heaped up bucket, the sound of the quick cough of the exhaust and the falling of the load on the rapidly mounted dump, is quite like old times when she was working day and night in chalk.

The effect in the darkness was very weird as a great acetylene flare was fitted to the underside of the end of the boom and focused on the bucket.

Fred Bowler, "The Driver," at the Levers

This revolved with the Bucyrus and was very effective indeed, as the light was always concentrated where wanted for either digging or dumping, no other light being needed to carry on.

During the erection on this project, the dragline was thoroughly overhauled and has given every satisfaction since, no delays having occurred through breakdowns on the Bucyrus.



The left-hand view shows the size of cars and the skillful dumping which is necessary. The right-hand view shows a car being dumped into the barge. Mr. Burdett in the foreground.

The Versatility of the Dragline

Apart from the actual excavation of the ballast the "Old Bus" has been used to tear up trees, to dump them in the pond for floating away. She gives a hand in erecting the elevated railway, has pulled boats off the mud and starts the loaded wagons on their journey by dropping the bucket and pushing them along for a few feet as she swings back for a fresh load.

The Bucyrus and plant was overhauled and erected by the writer who is in charge of operations at the pit. He and Fred Bowler, the driver, have been running this machine for some years and have also run a Bucyrus revolving shovel in conjunction with the dragline. Geo. Dillistone, the fireman, keeps the push on the pistons and always has enough steam to spare a little to boil a can of tea.

It speaks well for the material put into this machine that all the gearing is in first class condition and the engines running as merrily as ever.

Heavy Excavation on the Ettrick & Northern Railway, Wisconsin

A solid sandstone cut, 97 ft. deep, containing 86,000 yards, excavated with a ⅔-yard revolving shovel. The work described in this article, although completed some time ago, will interest contractors, as it indicates what can be done successfully with a small revolving shovel, if properly handled.

IN the Fall of 1916, Anderson Bros. of Rockford, Ill., were awarded a contract for the grading of the Ettrick & Northern Ry. This road, which is owned by the farmers and merchants of Ettrick, Wis., is ten miles in length and runs from Ettrick to Blair, Wis., where it connects with the Green Bay and Western Railway. Anderson Bros. had the contract for the grading, the tracklaying being done by the Railroad Company.

The Excavation on this contract totalled somewhat over 145,000 cu. yds., according to the profile and the engineers' estimate, about 45% of this being classified as rock.

The interesting feature of this work, was the excavation of the 97 ft. rock cut, illustrated in the accompanying view. This cut was about 90% sandstone and contained 86,000 cu. yds. The excavation was handled with a 14-B Bucyrus revolving shovel, which was delivered at Blair, Wis., in November 1916 and started right in on the job.

The first 30 ft. of this cut was loaded by the shovel into dump wagons and the rest into 1½-yard Western dump cars. The photograph describes the character of this work better than words.

In addition to this big cut, three smaller rock cuts were encountered, the remainder of the line

14-B Bucyrus Revolving Shovel, Anderson Bros., Contractors, Excavating for Factory of John D. Roper Corp., Rockford, Ill.

was light digging running from 5,000 to 7,500 cu. yards of earth per mile.

The contract was completed in October 1917.

According to Mr. Henry Anderson, the shovel never missed a day on account of break-downs, in spite of the hard character of the digging. He adds that although this shovel has been steadily at work ever since this time, it is still going strong and very few repairs have been required.

In the Spring of 1918, the shovel was shipped to Rockford, Ill. where it stripped a gravel pit for the Rockford Sand & Gravel Co. It then did a job for the Rockford Park Board in Black Hawk Park. On June 1st of the same year, it was sent to Camp Grant, where Anderson Bros. had a small contract with the C. B. & Q. for grading tracks for the new warehouse in the Camp. In

Heavy rock cut on the Ettrick & Northern Railway near Blair, Wis., containing 86,000 yards, 90% of which was solid sandstone. The cut is 97 feet deep. The entire excavation was done by Anderson Bros.' 14-B Bucyrus Revolving Shovel.

the same month, it was leased to the Henry Erickson Co. and was used in a gravel pit, loading wagons and trucks for road work around the camp. In December of the same year, the quartermaster took it over for loading coal and used it for this purpose until May 1919, when it was returned to Anderson Bros., who have been using it ever since on various jobs around Rockford, among others being the foundations for a large plant for the George D. Roper Corp., which was being built by the Westinghouse Church Kerr & Co., Inc. At the present time it is making the excavation for the reservoir for the new waterworks of the City of Rockford.

Safety Methods Now Employed in Building Construction

An innovation in making provision for the safety of workmen engaged in building and construction work has been introduced in the erection of large extensions to the plant of the American Rolling Mill Company at Middletown, Ohio.

At 2 P. M. each Tuesday a committee composed of foremen, mechanics and laborers inspects the entire job from sewers to roof with the one purpose of seeing that proper methods are taken to safeguard the employees against accident. This committee makes a detailed report of each inspection to a representative safety committee, which considers and puts into effect the recommendations of the inspection committee.

The plan was introduced and is being carried out by Dwight P. Robinson & Company, Inc., a large engineering and construction organization which has been making careful investigations of various plants for protecting its employees.

The success of this program is being closely watched by various safety societies which are now encouraging day laborers as well as trained men to speed up their work. Experts in all types of building construction are agreed that the first marked reduction in building cost will come through increased production. The best features of this new safety plan are being copied by many large construction companies in the United States and Canada. The public is interested in the plan because indirectly it will lower rentals by reducing construction costs. This applies equally well to industrial construction, large building projects and homes.

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Canal Construction and the Development of Excavating Machinery

So much is being said at the present time in reference to the St. Lawrence Tidewater Project, it seems but fitting to sketch briefly how closely the construction of waterways in the United States is tied up with the development of excavating machinery for this purpose.

Since the very earliest days of canal construction in this country, every project has presented its own problems and each problem in its solution has very generally lead in a most interesting manner, to the adaptation of various forms of excavating machinery to do the work in the most effective manner.

Perhaps the first large canal project in this country on which modern excavating machinery was used to any extent was the Chicago Drainage Canal, which was dug between the years 1892 and 1895. Old timers in the engineering and contracting fraternities will recall that this was undoubtedly the first severe test of the steam shovel in its modern form. In those days, this machine, although it had not reached the stage of development that we see today, was in principle very similar to the railroad type machine, so prominent during the years of railroad construction. The material encountered on this project was the hardest perhaps that had ever been tackled by any form of excavating machinery up to that time. It consisted principally of limestone and the shovels used were for the most part 50 and 60 ton machines. The remarkable success of the shovels paved the way for an enormous development and a greatly broadened field of application.

The Panama Canal chronologically came next. Little need be said in reference to this historic job, except that it will undoubtedly stand for many centuries to come as the greatest piece of steam shovel work ever attempted. Seventy-seven Bucyrus and twenty-three Marion steam shovels were used. The fame of this work and the remarkable success of the machinery used thereon, was spread over the entire world.

Following this came the New York State Barge Canal, another tremendous undertaking. This piece of work presented a broad variety of conditions, and consequently called for various methods of earth handling. On many sections, the familiar steam shovel and dump car equipment was used, where this method could be applied. In some sections were found cableways, grab bucket excavators and other types of machinery and at a later stage, dragline excavators on work incidental to the actual canal excavation. But the most important result of this work however was the development of the elevator and hydraulic types of dredges beyond the point hitherto reached in this country or elsewhere.

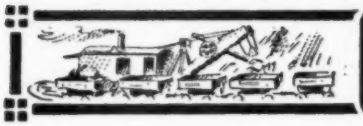
Up to this time the bucket or elevator dredge had been used principally for light harbor work in foreign countries, for canal construction in the swampy districts of the South and principally for placer mining in California, Alaska, New Zealand and elsewhere. The Barge Canal, however, was possibly the first project on which this type of dredge was used for heavy canal excavation, where the problem was encountered of handling the material considerable distances from the point of excavation. This was solved by the development of complicated systems of conveyors.

The hydraulic dredge had been known also up to this point, as only a tool for operation in light sands and in swamps. On the barge canal, however, they were used successfully digging boulders and heavy cemented gravel, material never before attempted by dredges of this type. This was made possible by powerful centrifugal pumps lined with manganese steel and heavy cutter-heads for breaking up the material, also made of manganese steel.

It would require a story of many chapters to trace consecutively the further development of machinery for canal excavation. In brief, however, it may be said that from this time on there appeared a new excavating machine, which has now almost completely replaced the steam shovel and the more expensive dredge plant. We refer to the dragline excavator. This machine had been used on some classes of construction work before in a rather undeveloped form. In fact, previous to this time it was an adaptation of light hoisting machinery and did not have the power or strength to handle heavy materials. This machine, however, has been so developed that it has undoubtedly a more varied field of application than any excavator built.

The Calumet-Sag Channel of the Chicago Drainage District was perhaps the first prominent canal project on which the success of the drag-

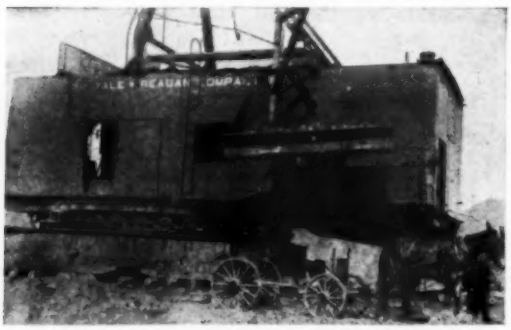
(Continued on page 279)



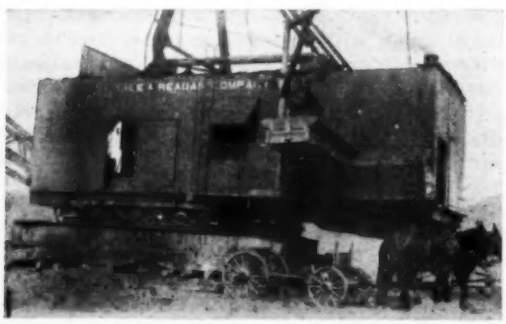
· FIELD NOTES ·

A Time Saver in Coaling a Dragline

The accompanying views illustrate a simple and most effective device for coaling a dragline excavator. This device has proved to be a great time saver for the Yale & Reagan Co. of Chicago. It is patented by A. W. Riney, Superintendent of this Company, on their work at Marion, Kansas, and is in use on a Class-24 Bucyrus dragline.



As our views show, the wagon body is lifted by means of a chain sling hooked to a line from the hoisting drum of the dragline. When the body is clear of the coal bunker, the rear end is rested on this bunker—the two rear chains unhooked. Further hoisting trips the wagon body as shown in Fig. No. 2 and unloads the coal. This operation occupies five minutes, whereas formerly 30 minutes were required.



This machine with a Class-14 caterpillar mounted Bucyrus dragline is in operation on a 12 mile channel in Cottonwood Creek, Marion County, Kansas, a 900,000 yard job which this Company expects to complete in the spring of 1921.

We are indebted to Mr. L. P. Yale, President of the Yale & Reagan Co. for this information.

Dame Nature vs. the Engineer

By W. F. Schaphorst

Nature is often called Dame Nature, which means that Nature is a woman. I believe it because woman can't be understood and neither can Nature.

For example, wherever you go or whatever you do you invariably have to fight for what you want. Nature has a tendency to give you the opposite of what your heart craves.

Piston rods and cylinders are made nice and smooth in the first place and it is our desire to keep them so, but little old Dame Nature takes a hand in the affair and does all she can to make sir piston rod and sir cylinder walls rough. Same is true of bearings, valve surfaces, the rails in our railways, and so on ad infinitum.

On the other side of the fence we have friction drives that were made rough in the first place, but Dame Nature is opposed to roughness there just for the sake of contrariness, and lo and behold, the surface soon becomes smooth. A file is made rough, but does it STAY rough? Even gears have a tendency to wear down smooth. Mother Nature sometimes tries to make gears smooth by breaking the teeth off. Very often, you see, she is hasty and doesn't use good judgment.

If you want to keep a thing sharp, you can't do it without constantly opposing Nature. If you want to keep a thing dull, look out or it will get sharp.

Nature is a woman, without doubt.

Care of Hoisting Ropes on Excavating Machinery

This is the second installment of a series of articles on the above mentioned subject. An article on Lubrication appeared in the September issue and may be obtained by sending for a September copy.

Installation

Many troubles due to ropes twisting come from improper installation of the rope on the hoisting machinery. While ordinary lay rope may be pulled directly from the reel over the sheaves onto the drum, this practice is bad for lang-lay ropes. Lang-lay ropes have a tendency to "bird cage" or the strands open up if they are given a chance. Lang-lay ropes are constructed and handled on special machinery. They must be taken off the reel and straightened out to allow them to adjust themselves before winding over sheaves or drums.

DEVICES YOU OUGHT · TO KNOW ABOUT ·

New Radial Type Loader for the Rapid and Economical Loading of Rough Materials

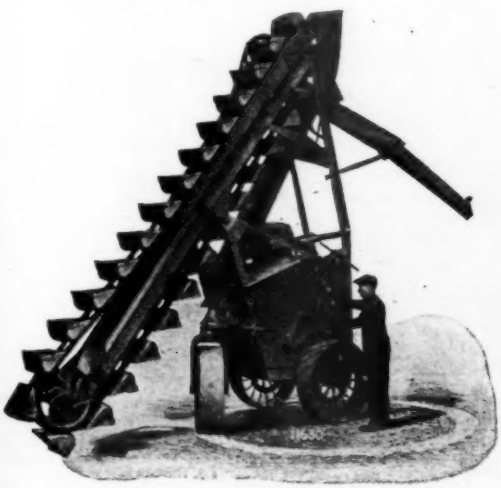
In recent years the increasing use of sand, gravel, crushed stone, ashes, slag, etc., for road building, concrete work, and other purposes, as well as the increased storage of coal and coke, has caused the handling and rehandling of immense quantities of loose materials.

During the time that help was plentiful and cheap, the prevailing method was to use a gang of laborers to shovel materials from ground storage to wagons or trucks. However, the constantly increasing cost and acute shortage of labor demanded the substitution of mechanical handling machinery to replace the old expensive and laborious "hand shovel" method.

To meet this demand the Jeffrey Self-Propelling Loader was brought out about 10 years ago, after extensive experiments and tests and careful study of the then existing conditions, being the first machine of its kind to be placed on the market, and has proved a remarkable labor saver and quick handler of materials.

It has been used with great success by hundreds of leading concerns, but in order to meet developments in the various industries and the constantly changing conditions, the Jeffrey Company has developed an improved design known as the Radial Loader, which overcomes all the objections of the old type of machine, and is the last work in design and construction.

This new type of Loader is made in two sizes to suit capacity requirements and service conditions. Type K, has a capacity of 1 cubic yard per minute, while the Type G, has a capacity of 1½ to 2 cubic yards per minute.



Type G Radial Loader

Self-Feeding into Pile

There is a great advantage in having the loader feed itself into the pile over other methods of hand shoveling or using a special mechanical device

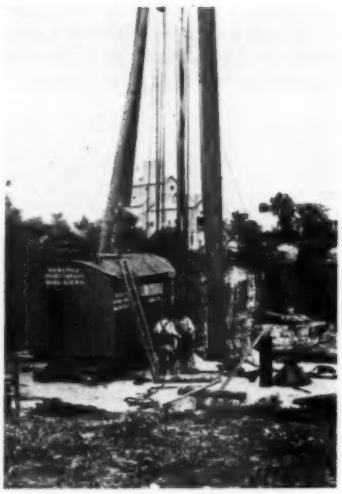
The Old Method—Hand Shoveling

to pull the materials in front of the buckets. The greatest objection to the old 4-wheel type of Self-Propelling Loader was its inability to feed into the pile. The Jeffrey Radial type Loader digs itself into a pile of material—each bucket being completely filled.

Three-Wheel Construction

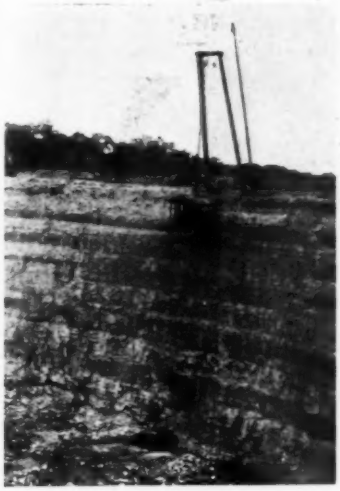
The three wheel construction of the Jeffrey Radial Loader enables it to move backward and forward along straight lines into a pile of material or to cut wide swaths across the face of a pile by swinging alternately upon its driving wheels as pivots, which action is obtained thru the use in its driving unit of a set of differential gears, the same as in an automobile, whereby the driving wheels act in conjunction with or independently of each other.

By turning the steering wheel at quite an acute angle to the driving wheels, the discharge chute will remain practically stationary as the center of the circle while the pick-up end of the extended elevator boom will travel in a circular path or by alternately reversing the propelling drive, the loader will oscillate back and forth in an arc. If the steering wheel is gradually turned thru a few degrees either way from the above circular path, the whole machine, while cutting from right to left in an arc will gradually move forward into the pile, allowing full range of the



The above photographs show how a 14-B Bucyrus shovel, owned by the Wauwatosa Stone Co. of [illegible], was lowered first and placed in position, ready for the revolving frame. The revolving [illegible] through it. The hitch was taken under the frame of the shovel and up to the [illegible] assistance of two husky mules, and the guy wires on the sheer legs were [illegible] wall of the quarry on the way down. The weight of the revolving [illegible] 11,800 lbs. The time required for erecting sheer legs [illegible]

This photograph shows a 14-B revolving shovel caterpillar-mounted, engaged in the construction of railroad spurs, leading to a new sugar factory being built by the West India Sugar Finance Corporation for the Atlantic Fruit Co. at Caye Mambi, Tanama, Oriente, Cuba. The shovel was purchased for digging the foundations for the heavy machinery for this factory and other excavation work connected therewith. Some of the material is overcast and some is loaded into 4-yard Western dump cars, hauled by bulls and by small locomotives of various makes. An interesting point in connection with this shovel is the fact that they are burning wood in a regular coal burning boiler with very good results. Mr. W. Kitchin is Supervising Engineer in charge of the work.



...s, was lowered into their quarry at Wauwatosa, a distance of about 75 feet. The base of the shovel ...ed in position under the sheer legs, the ventilator removed, and the hoisting hook lowered ...s inside the house. The revolving frame was then hoisted off the ground, with the ...ed the sheer legs to lean outward, so that the revolving frame cleared the ...oximately 19,800 lbs., and the weight of the base is approximately ...eady and lowering the shovel, was about two days.

The usefulness of the small revolving shovel is fast being appreciated by the Imperial Japanese Railways. This photograph shows one of six Bucyrus revolving shovels operated by this railroad on construction work. These six machines were shipped from the United States during 1919. The one here shown is an 18-B with ¾-yard dipper, in operation in the suburbs of Maebashi City, Japan.

machine. The illustrations also show the small radius in which the Jeffrey Radial Loaders will operate.

Other Advantages of the Radial Loader

The Radial Loader is designed to handle heavy materials such as crushed stone, sand, gravel, coal, etc. The large wheels enable it to pass over soft, rough or uneven ground, and it will rigidly maintain its equilibrium under all conditions of ordinary rough storage ground or floor. The quickly adjustable loading boom makes the loader an ideal clean-up machine on both smooth and rough ground.

The buckets are designed for heavy service, being made of malleable iron with renewable digger edge steel teeth riveted on front lips and ends.

Two-Speed Feature

The Radial Loader has a fast speed for traveling from pile to pile and a slow speed for feeding into the material.

Type K Radial Loader Handling Crushed Stone from Storage Pile to Motor Trucks

For drive, an electric motor or 4-cylinder gasoline engine is used.

Full information can be obtained from the Jeffrey Manufacturing Co., Columbus, Ohio. For convenience in making inquiry use one of the postal cards inserted in this magazine.

SHOTS FROM THE · FIRING LINE ·

Alabama

State Highway Comn., Montgomery, received bid surfacing and draining 16,600 ft. road from Brown Sta., to Perry Co. line, 16 ft. wide, Dallas Co., involving 7,400 cu. yd. gravel surfacing and 12,672 cu. yd. earth excav., from L. C. Rawlinson, Montgomery, $48,748.

Arizona

State Highway Comn. plans the construction of the following roads: Oatman to Topack; Kingman to Nelson; Kingman to Lower Sandy; Lower Sandy to Signal; Kingman to Utah State line; Kingman, south to Phoenix, by way of Bill Williams River Crossing, Mohave Co., estimate $300,000

California

Board of Commissioners of Washoe County have been advised by Federal Bureau of Public Roads that the Government will bear half the expense of constructing the fifteen-mile of gravel road from Reno, north to Purdy on California-Nevada line. Cost of highway approximately $191,000.

Board of Supervisors, Sutter Co., adopted plans and specifications for three miles of highway south from Long Bridge to cost $30,000.

San Joaquin County Notes

BY A. W. LADD

Three new water districts have recently been organized in this vicinity. They are the Vernalis Irrigation District, Kasson Irrigation District and the Banta Carbona Irrigation Distrct. The first two mentioned districts contain more than 8,000 acres and are situated near Vernalis. The Banta Carbona contains between 19,000 and 20,000 acres. Nearly all of the owners of land in the proposed districts have signed a petition and are in favor of its formation.

The first of a series of meetings in favor of construction of the Melones Reservoir was held a short time ago at Riverbank. James H. Cameron of San Francisco has written the Board of Directors of the Oakdale and South San Joaquin Irrigation Districts, making them a good proposition for the construction of the dam. Practically all of the farmers in the district which will be affected by the dam are in favor of the project.

J. E. Johnson of Stockton has copped street contracts in Stockton amounting to $75,000 which were awarded by the city council of that city recently. The work calls for the improvement of Rose street and streets in Lomita Park.

Canada

News from Ontario

BY R. ST. JOHN, TORONTO

General Manager E. L. Cousins of the Harbour Commission, Toronto, stated that extensive plans are being perfected to build up Sunnyside as a summer resort, including a bathing pavilion to accommodate 4000 people.

Information was received recently by the frontier town of Bridgeburg, to the effect that the same engineer who is now interesting Windsor and Detroit financiers in the project of building a bridge over the Detroit River, will also come to Bridgeburg and plan the construction of a bridge over the Niagara River. The proposed structure, it is stated, would cost $12,000,000.

A survey is being made by the C. N. R. for a new railway line in Frontenac County.

Mining operators from the Kirkland Lake, Larder Lake and Boston Creek districts waited upon Premier Drury to urge upon the Government the construction of an extension of the T. &. N. O. Ry., to serve these areas, the line proposed being about 22 miles.

Leeds & Grenville Counties contemplate expending $11,500.00 for road work and will probably proceed in 1921.

Contract for work of clearing, fencing, grading,

building trestles, culverts and bridge substructures on several deviations of main line on St. Lawrence subdivision of the Canadian National Railways, Head Office Toronto, are placed with Angus Sinclair, and T. Bartram, Toronto.

Canadian National Railways, Toronto, placed contract for construction of eight structures in Quebec District with Wm. Fletcher & Co. Toronto.

A new stone crushing plant will shortly be located at Durham. Mr. John E. Russell, well known in Toronto contracting circles, is at the head of the undertaking.

The Matheson Products Company, a new firm, will shortly commence the manufacture of brick at their plant at Matheson. The Company will turn out 20,000 bricks per day at the start, but it is expected to increase this capacity five times in a short while. Mr. R. S. Potter is president of the new concern and Mr. R. L. Ollman, manager.

Mr. Thos. McLaughlin was awarded the tender, by the Ottawa city council, for the construction of Cummings bridge. The tender price, $288,964 does not include the purchase price of Cummings Island nor for the preparation of the bridge approaches. The island will cost the city $30,000 and the construction of the approaches it is estimated $40,000.

The recent election of officers of the Niagara Peninsula branch of the Engineering Institute of Canada, held at Niagara Falls, Ont., resulted as follows—Chairman, W. P. Near, St. Catharines; vice-chairman, N. R. Gibson, Niagara Falls; Secy-treas., R. P. Johnson, Niagara Falls; exec., committee, H. L. Burke, Niagara Falls; W. H. Sullivan, St. Catharines; S. S. Lazier Thorold; A. J. Grant, St. Catharines.

Plans providing for the expenditure of $40,000,000 to improve the highways of Ontario and Quebec have been approved by the Canadian government under the operation of the Federal Highways Act. The total outlay contemplated in Ontario is $22,200,000, of which the Dominion government will contribute $5,800,000, the Province $12,000,000, and the municipalities $4,400,000. The principal item is the highway from Windsor to the Quebec boundary.

The following Companies incorporated recently

Muskoka Quarries Limited, with head office at Toronto, capital $300,000.

Central Foundation Co. Limited, with head office at Toronto to carry on the business of contractors, capital $50,000.

J. O. Giroux Co. Limited, with head office at Whitby, Ont. to carry on the business of general contractors, capital $40,000.

W. H. Bagshaw Limited, with head office at Toronto, to carry on the business of contractors, engineers, etc., capital $40,000.

Hamilton Contracting Co. Limited, with head offices at Hamilton to carry on the business of general contractors, capital $40,000.

Reid-Riddell Engineering Co. Limited, with head office at Toronto, to carry on the business of engineers and general contractors, capital $40,000.

Vancouver Notes

Premier Oliver is investigating the feasibility of constructing a government railway line to connect Pouce Coupe with the Edmonton, Dunvegan and B. C. Railway.

W. Chester Smith, formerly a British Columbia government engineer, has returned to Vancouver, after having spent nine months working as consulting engineer in the Louisiana and Texas oil fields.

A. E. Foreman, chief engineer of British Columbia's Public Works Department, was in Ottawa recently to discuss provincial affairs with officers of the Dominion government.

Contract for road paving, No. 2 section, costing $70,000, for Provincial Government, Department Public Works, has been awarded to Palmer Bros., 929 Main St.

Several grading contracts have been awarded by the Public Works Department of the Province of British Columbia, chief among which are the two following:—A. H. Davis, of Vancouver, has contract for a six-mile diversion on the interprovincial highway running easterly from the Okanagan Valley. At present nine miles of this road has a grade reaching a maximum of 14%, and this is beng reduced to a maximum grade of 8% in a distance of thirteen miles. Contract for the remaining seven miles of this diversion will be let next season. Angus MacDonnell, of Vancouver, has a contract for grading new construction on the Eagle Valley Road westerly from Revelstoke.

Colorado

State Highway Comn. has awarded contracts to the following: Federal Aid Project No. 109, Mesa Co., paving .956 mi. of road between Grand Junction and Fruita, to Winderburn & Napes, Grand Junction, at $24,259; Federal Aid Project No. 106, grading, draining and constructing one 60-ft. span steel truss bridge on 1.357 mi. of road between Steamboat Springs and Kremmling, also Federal Aid Project No. 80, 6.647 mi. Steamboat Springs-Hahns Peak Rd, Routt Co., to Northwestern Constructing Co., Craig, at $27,012 and $57,923 respectively.

District of Columbia

Washington Chamber of Commerce considers the improvement of roads in this city.

Combined federal and state expenditures for road building may reach a total of $250,000,000. Thomas H. MacDonald, Chief of the Bureau of Public Roads, Dept. of Agriculture.

Idaho

S. E. Cumerford, low bidder for work on North and South highway project, Washington County at $179,-870. J. C. Maquire low bidder for work on Federal Aid Project No. 21 on the Roosevelt highway in Bonneville County at $243,772. Fred Coolidge awarded contract for the construction of 19.2 miles of road in Power County on the Idaho Pacific county, at $108,584 and for the Butte County Project on the Idaho Central Highway. Funds of $90,000 available for said work in Butte County.

Illinois

The Engineering Committee of the Sanitary District of Chicago plans the dredging and widening of the Little Calumet river at an estimated expenditure of $200,000.

Henry W. Hoist Company of Rock Island, awarded contract for the construction of two large contracts for the United States government at the Savanna proving grounds, amounting to approximately three-quarters of a million dollars. Work includes the grading for and construction of about 15 miles of standard railroad track, and the construction of a reinforced concrete bin for the storage of nitrates.

East Side Levee & Sanitary Dist., 225 Collinsville Ave., East St. Louis plans to build levee and canal for draining city, involving 707,500 cu. yd. canal excav. 373,-000 cu. yd. canal excav. hauled. 15,000 cu. yd. miscellaneous excav., 250,000 cu. yd. embankment borrowed and 3,400,000 sq. ft. trimming, grading and sloping. About $600,000. W. E. Putnam, East St. Louis, engr.

The movement for a deep-water channel from Chicago, Duluth, Detroit and other lake ports to the Atlantic Ocean has been endorsed by a body of supporters which grows larger every day. A great many American communities have passed resolutions favoring the project and almost every municipliaity in Ontario has endorsed the undertaking.

Indiana

Grover Peugh of 115 Vigo St., Vincennes, is operating a Class 14 Bucyrus dragline for F. C. Morgan in this city.

Contract for the construction of a gravel road in Boone Co., awarded to Cotton Weibke Engineering Co., of Indianapolis, at $42,866.

Kentucky

By October 1, the Kentucky Highway Commission has announced, it expects to have a large part of the Ohio River road from Paducah to Milton, a distance of about 250 miles, largely under contract. It is expected to take three years, however, to complete this highway, which traverses a very hilly country from one terminus to the other.

Maryland

Contracts have been awarded by the State Highway Comn., as follows: 1.99 mi. of highway from Friendville toward Love, Garrett Co., to J. M. Cain, Baltimore, at $39,055; .22 mi. of Paterick St., through Frederick, to M. J. Grove Lime Co., Lime Kiln, at $14,805.

Massachusetts

State Highway Comn., Boston, received bids building highway, near Holyoke, from D. O'Connels Constr. Co., Holyoke, $50,609; Cerrini & Sons Inc., Ashland, $53,484; Lane Constr. Corp., Meriden Conn., $54,748; highway in Andover, from G. R. Seabury, Inc., Providence, R. I., $39,757.

Michigan

Water Bd., 232 Jefferson Ave., Detroit, received bids furnishing labor and material for (a) excavating 50,000 cu. yd. earth and (b) driving 438,000 lin. ft. concrete piles for filtration plant, from Raymond Concrete Pile Co., Owen Bldg., (a) $2.48 per cu. yd. (b) $2.08½ per lin ft., total cost, $1,037,230; J. F. Casey Co., Union Arcade, Pittsburgh, Pa., (a) $2.25, (b) $2.22, total $1,084,860.

Contracts have been awarded by the State Highway Dept. as follows: Road No. 11-11, Berrien Co., City of St. Joseph, 1.23 mi. of 20-ft. bituminous concrete pavement, to Houghton Co. Road Comn., Houghton, at $25,- at $42,615.85; Road No. 15-6 Houghton Co., Village of Hancock, 0.809 mi. of 20 ft. bituminous macadam pavement ,to Houghton Co. Road Comn., Houghton, at $25,220; Road No. 27.2, St. Clair Co., City of Port Huron, 1.192 mi. of 20-ft. concrete pavement, to J. H. Baker & Sons, Port Huron, at $56,876.82; Road No. 28-6A, Gogebic Co., Wakefield Twp., 4.039 mi. of 16-ft. gravel road, to Oxnam & Brown, Ironwood, at $70,239.03.

Missouri

State Highway Dept., St. Joseph, received bids Aug. 20, building .376 mi. Frederick Ave. Rd., 29 ft. wide, Federal Aid Project 94, from Land Constr. Co. Ballinger Bldg., St. Joseph, $30,996. Work involves 239 cu. yd. earth excav., $1 per cu. yd. 2,960 cu. yd. borrow, $1. 6,434 sq. yd. each plain cement concrete base course, and bituminous surface course specification "B," $2.15 and $1.27 respectively, 3,785 lin. ft. combination curb and gutter, $1.50. 240 lin. ft. plain concrete gutter, $0.48; 20.02 mi. Sect. D. St. Joseph-Atchison Rd., 24 ft. wide, Federal Aid Project 49, from Lynch-McConnell, Moberly, $809,885. Work involves 211,454 sq. yd. 1 course plain concrete pavement, $3.78, 10,805 lin. ft. wooden guard rail, $0.98.

Mississippi

Contract for road work in Mississippi and Poinsett Cos. has been awarded to the H. O. Hanson Construction Co., Blytheville, at $1.250,000

Montana

Construction of roads in Adair Co. planned; estimate $60,000; also a road between Novinger and Danforth will be constructed; estimate $20,000.

New Jersey

Camden Co. let contract building 1.17 mi. road between Gloucester Pike and Hadonfield, to Sutton & Corson, 9th and Simpson Sts., Ocean City, $68,811.

Weldon Contracting Co., Westfield, N. J., will probably be awarded contract for grading, drainage and pavement on State Highway, Route No. 1, Section No. 8, Leesville Ave., to Milton Ave., Union County. Estimated 15,810 sq. yds. at $115,850.

C. H. Winans Company, Elizabeth, low bidder for 1.492 miles between Linden and Roselle, at $214,296. John Dorer, Irvington, for 1.361 miles between Roselle and Elizabeth, $237,490. M. I. Demerest of Sewaren, 1.472 miles between Rahway and Linden at $204,485. All said work on Route No. 1, State Highway system.

$3,000,000 will be expended for the construction of the state's highway system for the next year.

New Mexico

On informal bids opened by the State Highway Commission August 21, covering the construction of New Mexico Federal Aid Project No. 34-B, Rio Arriba County, which includes approximately twelve miles of grading, surfacing and drainage structures located between Chama and Tierra Amarilla, A. T. Young, Denver, Colorado, was the low bidder and contract was awarded to him at a cost of $95,991.55, exclusive of 10% for engineering and contingencies.

New York

The contract for completion of the viaduct approach to the Barge canal terminal at Court street, Rochester, has been awarded to I. M. Ludington's Sons, Inc., of No. 124 Powers building, for $306,750. The contract is considered by the state authorities to have been most advantageously placed, as the engineers estimate was $311,200. Frequently of late bids have greatly exceeded estimates of cost on public improvements.

New York City

BY G. H. HUTCHINSON

Mr. H. J. Davis, President of the General Equipment Company, Inc., together with his family, spent two weeks vacation at Oquossoc Angling Association, Indian Rock, Maine. Mr. Davis spent a large portion of his time fishing. Since his return he has been very reticent about passing on any information as to his luck. Therefore we are inclined to believe that since the 18th Amendment went into effect the fish in Maine have not as yet gotton accustomed to home brewed bait. At any rate we failed to receive any of the catch. On the appearance of Mr. Davis we imagine he enjoyed himself just the same, and the trip undoubtedly did him a lot of good.

Mr. C. S. Reed,-Vice President of the General Equipment Company, Inc., and family have just returned from a five weeks vacation in Nova Scotia. So far we have not heard of any wonderful catch being made on this trip. It is our opinion there is no excuse for this as the 18th Amendment does not extend into Canada. Therefore the quality of the bait that Mr. Reed procured in Canada had not been changed. Mr. Reed has benefited considerably by his vacation, and there is a marked improvement in his disposition since his return.

Mr. J. H. Wynne, Vice President, and family motored to the mountains of New Hampshire, and spent a very pleasant month at Lake Sunapee, N. H. He says he spent most of his time playing golf and with the children. He lost eighteen pounds and acquired a good coat of tan. He is now back at his desk and is as busy as a hen with one chicken. John had no excuse to offer for not bringing us home a mess of fish. We did not hear a word about the kind of bait there is in New Hampshire.

One of the Sugar Companies with headquarters here, operating in Cuba, wanted a steam shovel about as bad as Cox and Harding desire the "big chair" in Washington, and were not disposed to wait as long as either of the candidates Consequently they located a 31 "Marion," mounted on caterpillar traction, at some point in Ohio.

The next question was to get it to Cuba in the shortest possible time. They started out to secure the services of a man who was quick on the trigger and knew how, and secured the services of Mr. Al. Geddes.

As a special inducement they offered him a salary, his expenses, and a good bat bonus, if he would have it in operation in three weeks. Geddes undertook the task and started for Ohio, and in four days had the machine in New York, and the fifth day it was in the hold of a vessel without any knocking down other than was necessary to move it by rail. The revolving portion of the machine, without removing the house, was small enough to go through the hatches of the steamer, and was ready to leave port on the sixth day, and is now somewhere between Manhattan and Cuba.

On arrival, the machine is to be moved about a mile from the landing where it will be put in service if Geddes maintains his present speed. We are of the opinion he will be back in New York with a bonus by the time his limit has expired.

North Carolina

North Carolina Lines, Inc., capital stock $500,000 applied for charter to build interurban railway from Charlotte to Winston-Salem, about 70 mil., and other points, including Concord, China Grove, Kannapolis, Salisbury, Spencer, Lexington and Wallburg. Incptrs.: Harry F. Hann, C. C. Coddington Floyd M. Simmons and John McGibbons. Headquarters 31 S. Church St., Charlotte, N. C.

The Gibson Construction Co. of Knoxville, Tenn., gets the contract for five miles of the "Daniel Boone Trail" highway through the mountains in Mitchell county at $185,000. The other contracts for highway construction which have just been awarded total 83 miles at a cost of $650,000.

The Co. Comrs. of Perquimans Co. have had surveys made for the construction of 15 mi. of hard-surfaced roads.

Northern States News

All the members of the American Society of Mining and Metallurgical Engineers who attended the annual convention held in the Lake Superior District the last of August, were strong in their praise of the respective entertainment committees of the various mining localities visited. One of the older members when coming out of the refreshment booth in Bennett Park, Hibbing, Minn. on August 27th with a bountiful supply of Mrs. Hibbing's best chow was heard to voice the general opinion of the visiting members as follows: "By George, these people up here are the limit. They don't give one a chance to rest between drinks. Each town we go to tries to outdo the last town we have left in the matter of showing us a good time, and, I, for one, am all in." Apparently Mrs. Hibbing's food acted as a bracer, as this same individual was discovered a couple of hours later occupying a ring side seat at the boxing match.

Nobles County, Minnesota, was awarded contracts for the construction of Judicial Ditch No. 11 to the following: Anderson & Empie, Marshalltown, Iowa, Sections 1, 2 and 3; Sorenson Excavating Company, Turin, Iowa, Section 4.

The contract for the construction of the Mud Lake and Garden Valley Drainage Systems of Douglas County, South Dakota, have been awarded to the Northern Minnesota Drainage Company, of Litchfield, Minnesota.

All bids received for the construction of Federal Aid Project No. 93 State Road No. 9 of Scott County, Minnesota were rejected.

Schultz Brothers, of Bow Bells, North Dakota, are stripping and mining coal for the Truax Coal Company near Columbus. They are using elevating graders and a 30B Bucyrus Shovel for this work.

Pierce County, Wisconsin has awarded contract to Isaacson Brothers and Mulhern of Spring Valley, Wisconsin, for the construction of the Ellsworth River Falls Road.

Federal Aid Project No. 42, consisting of 21.1 miles of grading and drainage on the Yellowstone Trail in Brown County, South Dakota, has been let to H. C. Hansen, of Groton, South Dakota; 10.7 miles of the Yellowstone Trail Federal Aid Project No. 44 in Roberts County and 16.5 miles of the Road Federal Aid Project No. 63 in McPherson County, South Dakota, has been let to Stevens Brothers, St. Paul, Minnesota.

J. C. Richardson, Anoka, Minnesota, has been awarded contract for repairs of Ditch No. 28.

Ohio

City of Cleveland received bids grading, draining and paving (a) Chester Ave. from East 12th to 17th Sts., involving 7,000 cu. yd. earth excav., 5,500 sq. yd. asphalt, 50,300 sq. ft. 4 in. concrete base, (b) East 140th St. from St. Clair to Aspinwall Aves., 14,298 cu. yd. earth excav., 9,350 sq. yd. vitr. brick, 91,450 sq. ft. 6 in. concrete base, from Cleveland Trinidad Paving Co., The Arcade, (a) $26,387; Riley Bros., The Arcade, (a) $33,955, (b) $90.-103; Gould & Maybeck, 823 East 150th St., (b) $88,513; River Constr. Co., 12109 Mayfield Rd., (b) $89,172.

Notes from the Miami Conservancy District

The following men are operating Bucyrus draglines at Hamilton, Ohio. Tom Bowen, Gordon Cheyne, Tom Perkins, H. P. Rowlands, H. B. Linden. C. H. Eiffert is Division Engineer, in charge of the work at this point.

The following men are operating Class-24 Bucyrus draglines on the Englewood Dam. Louis Bouladier, H. Bell, T. P. Green, Vincent Hayes, William Heller, and Phil. Parrish. Harold W. Horne is Assistant Division Engineer at this point.

Notes from the Pacific Coast

BY L. T. RUSSELL AND C. W. WHITNEY

Contracts have been let for work to be done in the Reclamation District 2047 in Glenn and Colusa Counties, California, on the West Side levee. The Fred Frank Dredging Company of San Francisco was given a contract to excavate two million yards at 24 cts. per yard, clam shell dredges being used for most of the work. The Percy Burr Company was awarded a contract at 34 cts. a yard for 1,300,000 yds. This Reclamation District comprises 250,000 acres and is one of the largest reclamation undertakings in the West. A pumping plant will be installed at Knights Landing.

An application has been made by Victor DeMarias and Charles E. Watson, California parties, to the State Engineer of Oregon for the appropriation of 4,000 second feet of water from the Klamath River for the development of 150,000 H.P. and irrigation of 250,000 acres of land in the Sacramento valley. It is the intention to divert the water from the Klamath River in Oregon and carry it by main canal 60 miles into the Sacramento valley. This project will cost upwards of $15,000,000, and is one of the largest undertakings that has been contemplated in the West.

J. A. Hill, the veteran earth mover of Los Angeles, seems to have a monopoly on the big excavation jobs in Los Angeles. He is keeping his 18-B Bucyrus and his Thew shovel very busy on this work. Mr. Hill has recently been awarded a contract by the City for the large 2nd Street tunnel which will relieve the traffic congestion in the business portion of the city.

The Union Rock & Gravel Company of Los Angeles are having their troubles in attempting to supply materials to the many building and road contracts now in progress in the metropolis of California. On account of the difficulty in getting hold of cars to move the material from their several outside plants, they have decided to open up what is known as the Brush Canyon quarry in the north part of the City and will make deliveries from this quarry by truck, thus relieving the car shortage considerably. They already have three standard Bucyrus shovels in use in their operations and have decided to use a 30-B revolving caterpillar shovel on their Brush Canyon work. Mr. Herbert Stone is the Treasurer and active Manager of the Company's large operations. Mr. H. C. Chenoweth is the Superintendent.

Mr. G. H. Moore, the Assistant Superintendent, is in active charge of the mechanical equipment of the plant.

E. Schelling has a $90,000 paving and sidewalk contract in a new sub-division in the north part of Los Angeles near Eagle Rock.

The Santa Fe Northwestern Railway has recently been incorporated at Aztec, New Mexico, with a capitalization of one million dollars. It is proposed to build a branch from Bernaillo on the Santa Fe railroad, 55 miles to the northwest. The new road will serve as a feeder to the Santa Fe and it is understood that that Company will assist in the construction by the loan of machinery, etc.

C. H. Cardlin, Manteca, has been awarded a contract for nine miles of canal by the James Irrigation District.

The Sutter-Butte Canal Company, during the last five years has added 150 miles of canals, laterals and ditches to its system. It has been constantly expanding. In this work the Company has used a 70 ton Bucyrus shovel and some small equipment. The Company is now irrigating 60,000 acres of land in the Feather River valley from a point above Gridley to a point south of Live Oak.

Pennsylvania

The Johnstown Slag Company, Johnstown, have begun operation of their new slag plant at that point. The slag is from the Cambria Steel Company and is dug by Bucyrus 70-C shovels and loaded in twelve yard all steel dump cars and hauled to the crushing plant where the metal from the slag is reclaimed by electric magnets.

Pittsburgh and Vicinity

BY F. A. BUMBARGER

Chas. Wenner of the Uniontown Coal Company, Uniontown, Ohio has resigned his position and has accepted a position as General Superintendent of the Cadiz Block Coal Company, Cadiz, Ohio.

O. M. Montgomery, Assistant Purchasing Agent of the Aluminum Company of America has returned from his vacation. Mr. Montgomery spent a couple of weeks in the Northern part of Canada.

The Clinton Block Coal Company, Imperial, Pa., are erecting their 225-B and 35-B Bucyrus shovels at Imperial.

D. T. Watkins, Engineer of Construction, B. R. & P. Railroad Company was a business caller in the city during the month and we greatly enjoyed his visit.

D. E. Gilmore, engineer of a 225-B Bucyrus for the Blanchard Coal Company has just returned from his vacation.

The Casparis Stone Company have completed the erection of their Bucyrus Class-24 Dragline. This machine will be used in stripping their stone quarry at Connelsville, Pa.

Rhode Island

U. S. Eng. Office, War Dept., let contract dredging in Providence River and Harbor, to E. Breymann, 103 Chamber of Commerce Bldg., Toledo, O., $142,761.

South Carolina

State highway officials plan the improvement of a stretch of roads in Columbia-Newberry Highway, in Lexington County, in Newberry County, and in Richland County.

Construction of 30 mi. of Camden-Ridgeway Rd., planned by the Co. Comrs. of Kerkshaw Co. Address C. H. Moorefield, Engr.

Construction of 18 mi. of road between Spartansburg and North Carolina line, planned by the Co. Comrs. of Spartansburg Co. Address C. H. Moorefield, Co. Engr.

Construction of 15 mi. of highway between York and Cherokee line planned by the Co. Comrs. of York Co. Address C. H. Moorefield, Engr.

Southern States News

BY C. N. BALLENTINE AND E. J. WILKE, BIRMINGHAM, ALA.

The well known shovel engineer, Mr. Ray L. Munson, who has been working in Texas, is now located at Pueblo, Colorado, where he is operating a Bucyrus 70-C for the Santa Fe. Mr. Munson writes that he finds himself at home on this shovel. His address is: 211 So. Union Avenue, Pueblo, Colorado.

A number of the large coal companies in the Birmingham District are installing stripping shovels on sections of their properties. These installations will assist in increasing the output of coal in this district, which has been somewhat cut down, on account of recent strikes.

The Fourth District of the Mississippi River Commission, New Orleans, La., are asking for bids on nearly 3,000,000 yards of levee work.

It is reported that the Cisco Clay & Coal Company has leased a large section of land near Cisco, Texas, and will construct a brick and pottery manufacturing plant on the property.

The State of Texas has under consideration, the matter of constructing a cement plant, which will be operated by the State, and used to provide cement for the requirements of future work.

The new plant of the Brinkley Brick & Tile Company, near Coleman, Texas, is reported to be in operation.

The Fischer-Herbert Brick Company, Memphis, Tenn. have enlarged their plant, soutn of the City, and are now making common and pressed brick.

The Moss-Devoe Brick Company also of Memphis, Tenn. are reported to have increased the capacity of their plant, and to be shipping large quantities of common brick to Arkansas and Mississippi.

The Houston Pressed Brick Company, Houston, Texas, intend to build a new plant near Houston, and expect to turn out the manufactured product in the near future.

Mr. B. H. Schoenmarcher is operating an electric dragline for the Bibb Brick Company, at Macon, Georgia. Mr. G. S. Woodruff is superintendent of this plant.

Mr. E. W. Parker, Contractor, Tampa, Florida, has recently received a contract from the American Agricultural Chemical Corporation, at Pierce, Florida, for the removal of six hundred thousand yards of overburden from a phosphate deposit at that place. Mr. Parker will use an 80-C Bucyrus Shovel and 12-yard dump cars on this work.

Mr. E. W. Richardson is operating an Osgood-73 steam shovel for A. F. Langford on some phosphate stripping work, which he has near Bartow, Fla.

Mr. M. C. Hinton is at Alafia, Florida, where he is employed by Swift & Company on some stripping work. This company is using a large dragline excavator on their work.

The Seminole Phosphate Company, of Croom, Florida, have acquired a large acreage of phosphate deposit near Bartow, Florida. It is the intention of this company to develop this property and install a plant for the production of phosphate. Mr. W. F. Walker is vice-president of this company.

The O'Brien Construction Company reports their road work near Balsam, N. C., to be progressing favorably. This company has recently secured an additional contract for some road work adjoining their present contract, and they will install an additional steam shovel to handle the new work.

W. S. Knight & Company, at Memphis, Tenn., have been awarded contract for constructing, grading and drainage structures on Tennessee Highway Project No. 22. This work is located in Carroll & Weakley Counties, and envolves the expenditure of $117,902.36.

F. H. Crow, Contractor at Dickson, Tennessee, has been awarded a contract on the Tennessee State Highway No. 2, between Cheatham County Line and Burns.

South Dakota

State Highway Comn., Aberdeen, let contract grading and draining 21.1 mi. Yellowstone Trail from James west through Aberdeen to west county line. Federal Aid Project 42, Brown Co., to H. C. Hansen, Groton, $114,696; 10.7 mi. Yellowstone Trail from Summit to west county line, Federal Aid Project 44, Roberts Co., involving 52,113 cu. yd. excav., 61,628 cu. yd. overhaul, 30,100 lb. reinforcing and 14.412 lb. structural steel, etc., also 16.5 mi. road west and south of Leola, Federal Aid Project 63, McPherson Co., 86,475 cu. yd. overhaul, 598 cu. yd. loose rock and 90,382 cu. yd. earth excav., etc., to Stevens Bros., St Paul, Minn., $74,450 and $91,436 respectively.

Tennessee

Contracts have been awarded by the State Highway Dept. as follows: State Highway 8, Federal Aid Project 20, 14.322 mi. in Frentress Co., to Putnam Construction Co. of Cookeville, at $312,876; State Highway 32, Federal Aid Project 25, 19.086 mi. in Giles Co., to Columbia Construction Co., of Columbia, at $534,605.

Texas

R. A. Love of San Antonio, is working on plans to build the extension of the Kansas City Mexico & Orient Ry. from San Angelo to Sonora, Tex., 61 miles in length.

San Antonio & Rio Grande Valley R. R., San Antonio, organized to build 300 mi. line from San Antonio to Brownsville and Port Isabel. J. B. Carrington, 401 Grayburg Bldg., San Antonio, secy.

County Commissioners' Court has sold bonds of $200,000. Money to be used on county roads, Parker County.

The Lone Star Stone Company of Chica, Tex., is operating a 95-ton Bucyrus shovel in their rock quarry at that place.

The Central Texas Gravel Company operate a modern, up-to-date gravel pit twelve miles north of Dallas, using a Bucyrus 14 dragline, equipped with a two-yard dipper. They report splendid business and bright prospects.

Plans have been prepared for grading, surfacing and draining 4.117 mi. of Highway 2D, between Ringgold and Red River; estimate $48,500. Address J. R. Hill, Co. Engr., Bowie.

The Co. authorities of Lamb Co. contemplate grading, surfacing and draining 33.2 mi. of Highway 7, between Hockley and the Bailey Co. line.

Contract for the construction of 8.8 mi. of Highway No. 20, in Bastrop Co., awarded to L. M. Clopton, Comr. of Precinct No. 4.

Grading, draining and surfacing 10.341 mi. of Highway 5B, from Bowie Co. line to English, Red River Co.; Work involves 13.46 acres clearing and grubbing, 52,840 cu. yd. borrow, 6,263 cu. yd. earth excavation, 260.3 cu. yd. class A concrete, 16,167 cu. yd. gravel surfacing, 17,609 lb. reforcing steel, and 21,568 lb. structural steel; estimate $129,500. Address P. Y. Creager, Co. Engr.

Utah

Strange-Valandingham Co. low bidders for grading 10.45 miles of road between Price and Castlegate in Carbon County at $132,126.

Virginia

The Norfolk & Portsmouth Belt Line Railroad Co., in connection with the city of Norfolk, Va., and the Standard Oil Co., is bulkheading its property at Sewells Point, Va., and is also dredging in front of the bulkhead. The $50,000 of notes recently issued by the company were floated to take care of the bulkheading and dredging work, and the purchase of new rails and accessories for maintenance.

The Tazewell Timber Corporation, 29 Broadway, New York, is building on its own account 18 miles of 42-inch gage, railroad from Gratton to Cove Creek, Va., via Coxe's Branch and Cove Creek. S. G. Adkins, Grattan, Va., is general manager.

Wise county will spend approximately $700,000 for rebuilding roads in the Richmond and Gladesville magistrial districts.

Washington

Kaiser Paving Co., 304 W. 36th St., Seattle awarded contract for the paving of 5½ miles of the Vashon Island Highway, from Vashon Heights to Vashon Center, with a 16-foot concrete roadway, at $183,911.

State Highway Dept. has awarded contracts to the following: Surfacing with crushed rock 8.62 mi. Inland-Empire Highway, between Dodge and Delaney, Columbia and Garfield Cos., to General Construction Co., Spokane, at $36,704; clearing and draining 2.01 mi. State Rd. No. 4, Lincoln Co., to McKiver Bros., Ritzville, at $39,760; clearing, grading, draining and surfacing with crushed rock 1.25 mi. North Bank Highway, Skamania Co., also grading connection for Underwood Bridge on North Bank Highway, Klickitat Co., to Rojotte, Fobert & Winters, Spokane, $36,620 and $55,900, respectively.

Wisconsin

Wisconsin & Northern R. R., Old 1st Natl. Bank Bldg., Appleton, let contract grading and excavating 5 mi. rail extensions between Wisconsin & Northern R. R. and Minneapolis, St. Paul & Sault Ste. Marie R. R., involving 135,000 cu. yd. excav., to Morris & Dougherty, 815 Globe Bldg., St. Paul, Minn. About $125,000; cost plus percentage basis.

Wyoming

State Highway Dept. has awarded contracts to the following: Federal Aid Project No. 97, Sweetwater Co., for grading 1.8 mi. of Thayer Jct. West Rd., to Scott & Bussey, Rock Springs, at $10,292; Federal Aid Project No. 27, Weston Co., 12.5 mi. of Newcastle-Sun Dance Rd., to R. George, Rozet, at $24,942; Federal Aid Project No. 98, Carbon Co., grading and paving with concrete, including construction of 8 reinforced concrete box type culverts on 4.2 mi. Saratoga-Encampment Rd., to Ferrey & Anderson, Cheyenne, at $29,529; Federal Aid Project No. 96, Goshen Co., grading and installing 6 reinforced concrete culverts on 3.75 mi. Torrington-Lusk Rd., to S. L. Smith, Henry, Neb., at $14,406; Federal Aid Project No. 94, Park Co., constructing 60-ft. Dry Creek Bridge with concrete and steel, to Standfield & Alderdice, Basin, at $18,828.

Foreign

Japan

According to an estimate of the mining bureau of the Department of Agriculture and Commerce at Tokyo, based mainly on coal veins over 2 ft. thick, and generally lying not more than 2000 ft. below drainage level, the available coal deposits of Japan amount to about 822,000,000 metric tons of 2204 lb. In addition, it is judged that approximately 2,940,000,000 metric tons, which lie at greater depths, can be mined, if highly efficient methods are used. It is also surmised that the concealed and undetermined deposits of coal may possibly amount to 5,030,000,000 metric tons.

South America

The Argentine Government has asked Congress to vote 4,200,000 gold pesos for the improvement of the port of La Plata. It is proposed to deepen the port so that it shall not be anywhere less than 30 ft.

New Zealand

It is proposed to cut two tunnels through the hills near Wellington, to bring water to the city from the Orongorongo River. The present population of Wellington and its suburbs is about 95,000. The scheme includes extra mains and other details to provide a water supply sufficient for a city of 130,000 people.

PROSPECTIVE · CONSTRUCTION

Arkansas

Harris Company, Ltd., of Toronto, Canada, will, it is reported, build railroad 18 mi. from Humphrey to Cornesto to develop timber land. A. J. Gill, Humphrey, in charge of construction.

Florida

Bondholders of the Birmingham, Columbus, & St. Andrews Bay R. R., A. D. Campbell of Chipley, Fla., receiver, are reported arranging for an extension from Chipley north to Graceville, about 12 miles.

Illinois

St. Clair Co. opens bids about Oct. 1, grading, paving and building bridges on 60 mi. road from East St. Louis to Mt. Vernon, 18 ft. wide, involving 630,000 sq. yd. concrete. About $3,000,000. C. M. Slaymaker, Metropolitan Bldg., East St. Louis, dist. engr.

Louisiana

La Salle Parish Police Jury, S. W. Hodges, Prest.; will grade and drain 7 mi. Jena-Little Creek and 10 mi. Jena-Nebo roads; bids until Oct. 4; Jas A. McConnell, Engr.

Michigan

Comrs. Chippewa Co. will grade, surface and drain 3.084 mi. State Trunk Line Rd. 25-16, 16 ft. wide. About $27,000. Work will be done by day labor.

Minnesota

J. L. Herring, aud. Faribault Co. soon receives bids building Co. Ditch 48, involving 20 mi. open work, 2,000,000 cu. yd. excav. C. K. Haggar, Blue Earth, Engr.

Co. Comrs. of Fillmore Co. plan to gravel 7 mi. of State Rds. 1 and 6; estimate $34,296. Address W. Dunbar, Engr.

Missouri

Bids will be asked soon by Curt McFarland, Second Assistant State Highway Engineer, Springfield, for the construction of road work on the Springfield-Hollister road in Hollister and Branson Special road districts.

North Carolina

Improvement of 4.5 mi. of road in Durham Co. planned; work involves 21,000 cu. yd. excavation, 500 ft. 18-in. pipe and 4,700 lb. reinforcing steel. Address F. E. Schnepfe, Co. Engr.

TRADE NOTES

The employees of Blaw-Knox Company recently received a very pleasant surprise when announcement was made that they had been provided with Life Insurance as an evidence of the Company's appreciation of the value of loyalty, co-operation and continued service.

All employees with not less than three months service are insured for $500; those with the Company from six months to one year, $750; from one to two years, $1,000; thereafter with each additional year's service the insurance is increased by $250, until a maximum of $2000 is reached. New employees are entitled to participate in the benefits of the plan after three months continuous employment.

One of the novel features of this plan is that no medical examination is required. The employee names his beneficiary in the same manner as he would under an ordinary policy, and has the privilege of changing this person from time to time as circumstances may demand.

The insurance remains in force as long as the employee continues with the company, although he may continue it at his own expense should he for any reason leave the concern. It is without expense of any kind to the individual covered, the entire cost being borne by the Blaw-Knox Company and this in addition to whatever other benefits may be provided by the State Workmen's Compensation Act.

"A man may, if he knows not how to save as he gets, keep his nose all his life to the grindstone."
—*Benjamin Franklin.*

Good luck will help a man over the ditch if he jumps hard.—*Spurgeon.*

Spiritualistic husband speaking to dead wife:
John: Mary, are you happy?
Mary: Yes, John, I'm very happy.
John: Mary, are you happier than when you were with me?
Mary: Yes, John.
John: Heaven must be a wonderful place?
Mary: But John, I'm not at that place.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review, in this column, such books and catalogs as are sent to us. Books reviewed in these columns will be supplied by The Excavating Engineer Publishing Company at the price named.

METAFORMS. A folder introducing metaforms, which are interlocking steel forms used in monolithic concrete construction. It contains a complete description, with illustrations, as to uses and how these forms eliminate the use of wood forms, which hammer down the contractor's concrete profits. *Metal Forms Corporation, 1436-40 Booth St., Milwaukee, Wis.*

ELEMENTS OF MINING. By George J. Young, A. I. M. E. 628 pages, 6 x 9, 271 illustrations, $5.00. A comprehensive view of the mining problem, emphasizing fundamental engineering principles and present cost analysis. It covers both coal and metal mining. *McGraw-Hill Co., Inc., 239 W. 39th St., New York, N. Y.*

HOOVER-PRINCIPLES OF MINING. By Herbert C. Hoover. 199 pages, 6 x 9, illustrated, $3.00. The principles of mining as developed by modern science and business methods and investments from the public standpoint. The author's very wide and varied experience enables him to command an unusual amount of valuable data. *McGraw-Hill Co., Inc., 239 W. 39th St., New York, N. Y.*

GILLETTE HANDBOOK OF ROCK EXCAVATION. By H. P. Gillette. 825 pages, 5 x 7½, illustrated, $6.00. A memorandum of the best modern practice in drilling and handling rock of all kinds under all conditions, illustrating large machines and methods, with cost of actual work done. *McGraw-Hill Co., Inc., 239 W. 39th St., New York, N. Y.*

MINE TRACKS. By J. McCrystle, E. M. 105 pages, pocket size, flexible, illustrated, $2.00 net Potpaid. A compact treatment of the materials used and the principles involved in the design and installation of mine tracks, with a set of rules for standard practice. *McGraw-Hill Co., Inc., 239 W. 39th St., New York, N. Y.*

ENGINEERING ANALYSIS OF A MINE SHARE. By J. C. Pickering, E. M. 95 pages, 6 x 9, numerous tables, $1.50 net Postpaid. The considerations which enter into

the analysis of a mining venture, are discussed concisely in this book by a mining engineer of broad experience. The discussion is on broad lines, and will appeal alike to the engineer and the investor. It is confined to gold, copper and silver. *McGraw-Hill Co., Inc., 239 W. 39th St., New York, N. Y.*

INTERNATIONAL MINING LAW. By Theo. F. Van Wagenen. 342 pages, 5 x 7 flexible, $3.50. A readable digest of the mining laws of the world, with notes on the results obtained under the several systems. A treatment of the salient features of the history of the industry in each principal field is included. *McGraw-Hill Co., Inc., 239 W. 39th St., New York, N. Y.*

MECHANICAL ENGINEERS' HANDBOOK. By Lionel S. Marks. 1,800 pages, with 1,000 illustrations, flexible, $6.00 net Postpaid. Data contributed by over 50 well-known specialists placed in an available and extremely convenient form. It is almost as if you had, always at your command, a consulting staff of 50 of the best engineers in the country. *McGraw-Hill Co., Inc., 239 W. 39th St., New York, N. Y.*

ROAD BUILDING AND PAVING CONTRACTORS' HANDBOOK. 4 x 7, 25 pages, illustrated, price 35c. Contains very complete and interesting tables and information on materials required per mile, various mixtures, handling of road building materials, labor and time saving studies, cost reductions, etc. This book will doubtless be of considerable value to road contractors and others doing a considerable amount of concrete work. Published by the *Lee Trailer & Body Co., 2343 So. La Salle St. Chicago, Ill.*

DATA BOOK FOR ENGINEERS. The Locomotive Superheater Co. have recently issued a data book intended to assist stationary engineers in their every day work, by furnishing them with useful data which they have frequent occasion to use. The value of this book is that it contains in a convenient form under one cover, information collected from various authoritative sources. The data book contains a preface dealing with the factors governing the advisability of using superheated steam and is followed by well arranged tables of value to stationary engineers. A copy of this booklet will be sent to anyone actually interested in steam engineering by writing *The Locomotive Superheater Co., 30 Church St., New York, N. Y.*

PRUDENTIAL STEEL BUILDINGS. 7½ x 10¾. 32 pages and cover, illustrated. A well arranged catalog, describing the Blaw-Knox line of galvanized sheet steel buildings, known as Prudential Steel Buildings. This is a recent addition to the Blaw-Knox line. The catalog gives an excellent conception of their adaptability to various purposes. Among other things they may be used for light manufacturing, storage and warehouses, machinery houses, bunk houses, power houses, mess halls, boiler houses, truck garages, industrial cottages, etc. They are excellently adapted to construction work. This catalog will be sent free upon request by *Blaw-Knox Co., Pittsburgh, Pa.*

A man stood watching a steam shovel at work. With a clatter and a roar the shovel bit into the steep bank, closed in a cartload of earth and dumped it on a waiting flat car.

"It makes me wild," said the man to the foreman, "to see that monster taking the bread out of good men's mouths. Look at it. Why it's filling up those wagons faster than a hundred men with picks and shovels could do it."

The foreman shook his head and answered:

"See here, mister, if it would be better to employ a hundred men with picks and shovels on this job, wouldn't it be better still, by your way of thinking, to employ a thousand men with forks and tablespoons?"

Temperance Lecturer:—"I am informed that this town is thoroughly dry. Is it true?"

Citizen:—"Yep, that's so. Not a drop in it."

Temperance Lecturer (beamingly):—Do tell me how you good citizens accomplish it."

Citizen:—We drank it dry." —*Judge*

An Englishman, discussing his impressions of America, happened to say to a friend in New York, "Why, even your newsboys can't take a joke!"

The American friend replied, "Just try the next one that comes along with some nonsense and see if he can't answer you."

The Englishman agreed, and stepped up to a newsie, saying, "Hello youngster, look at your nose and tell me what time it is."

The boy quickly replied, "Aw, look at your own; mine ain't running."

Canal Construction and the Development of Excavating Machinery

(Continued from page 267)

line excavator was proved. This was closely followed by many large canal and ditch projects carried on by the U. S. Reclamation Service, the Mississippi River Commission and other irrigation and drainage projects.

The Welland Canal in Canada was dug to a great extent by dragline excavators as was the great Winnipeg Aqueduct, while the tremendous earth moving projects, such as the Little River Drainage District near Cape Girardeau, Mo. and at the present time the Ohio River Flood Protection, by the Miami Conservancy District offer remarkable examples of the effectiveness and success of this machine.

The chief advantages of the dragline excavator for canal and ditch construction is the ability of this machine to dig with equal effectiveness at or below its own level, and to excavate with equal success in dry material or under water. Its enormous reach, however, and its ability to deposit the excavated material sufficiently far away from the point of excavation to eliminate the necessity of expensive rehandling equipment, perhaps has proved an even more valuable feature of this machine for canal work.

The dragline is easily handled and in comparison to dredge and steam shovel equipment previously used for the same type of work, is a great economy as far as first cost is concerned. It may be driven with equal success by steam, electricity or by an oil engine and may be mounted on various types of mounting adaptable to the conditions under which it will work. The larger sizes with booms from 100 to 155 ft. are generally mounted on skids and rollers or trucks and the

Forget the Gang!

Two Men and a Smith Will Do!

THE Smith Excavator and Loader is a marvelous labor saver. It will replace 15 to 30 hand shovelers—depending upon conditions of digging and hauling. It has distinct advantages over the Steam Shovel because of the low initial cost, economical operation and method of working. It does not get into its excavation. It works at street level—can be moved from one job to another as easily as a wagon.

Write or wire for complete specifications. Explain briefly the kind of work you have in mind—excavating, grading, plowing, loading at material yards or sidings. The profit earning capabilities of this machine will surprise you.

The T. L. Smith Company

492 Old Colony Building . . . . . Chicago, Illinois

Smith Tilting and Non-Tilting Mixers *Smith Simplex Paving Mixers*
Smith Excavator and Loader *Smith Pumping Outfits* *Complete Construction Equipment*

SECOND HAND STEAM SHOVELS, LOCOMOTIVE CRANES, LOCOMOTIVES, CARS, WAGONS, RAILS, ETC.

Sold Under Guarantee

To be right in every respect

CLAPP, NORSTROM & RILEY

12 and 14 So. Canal St., CHICAGO, ILL.

smaller sizes may be equipped with caterpillar traction. At the present time they are offered with booms varying in length from 35 to 155 ft. Without much question, the construction of the waterways in the future will be done to a great extent with this type of machine.

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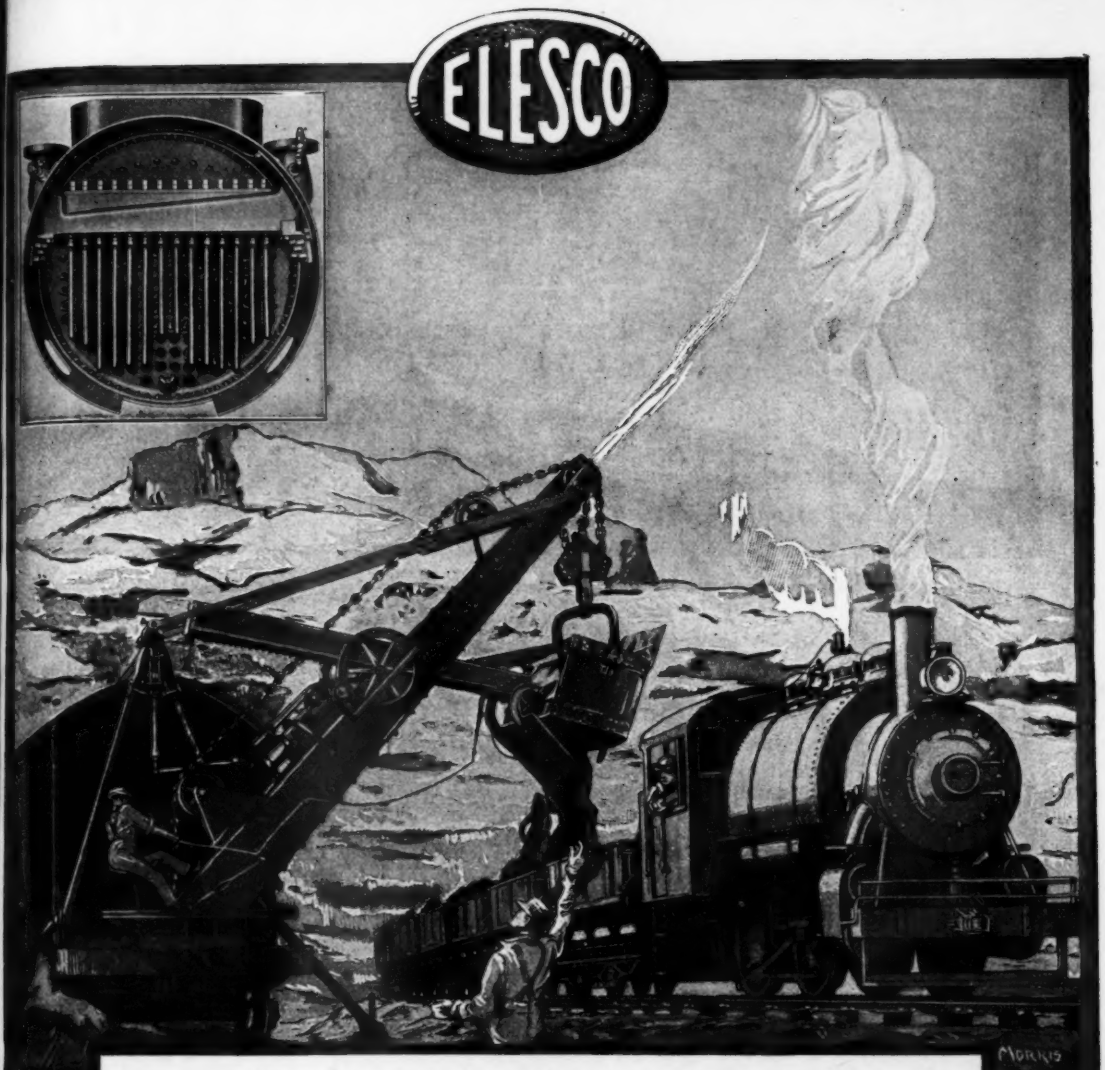

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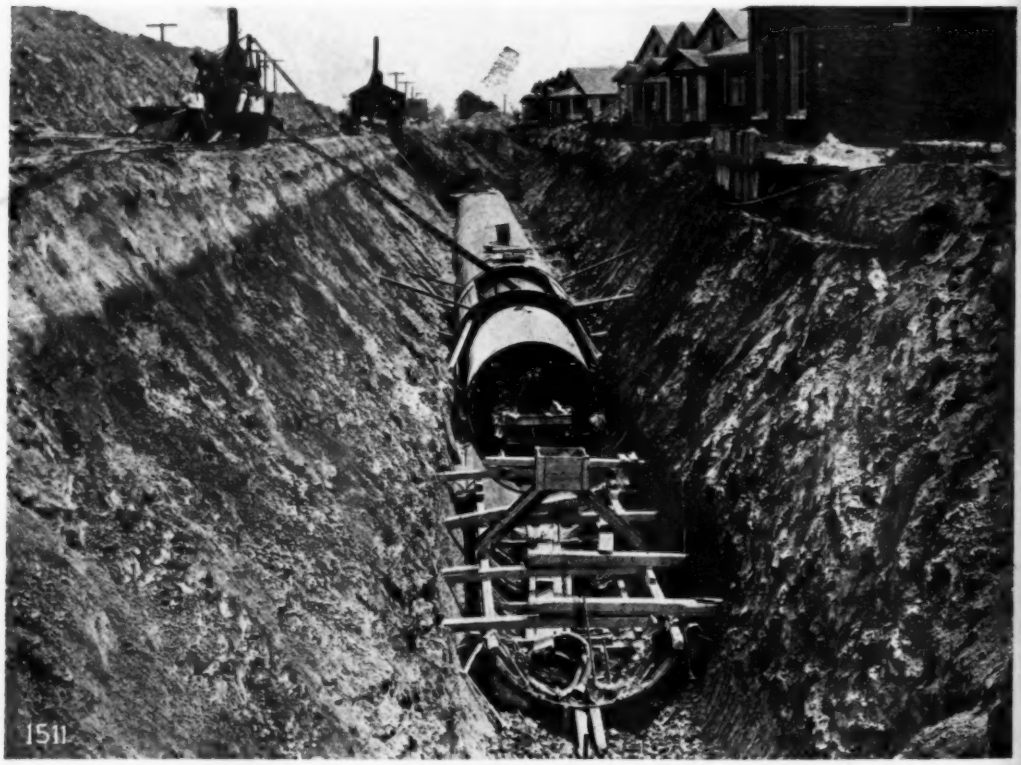
This view gives a good idea of how the back filling is being done. The kids in the foreground are evidently helping the back filling crew.



Another view of the trench showing how the forms are set and the concrete poured

Two Views of Brandon & Hanna's Sewer Job in Detroit